

CAN THE BLIND BE MADE TO SEE?—A Curious Experiment

These Photographs Illustrate the Experiment by which Dr. Stiens Enabled a Blinded Man to See.
From Models Made Specially for the Sunday Journal by E. B. Meyrowitz.

LONDON, Sept. 18.—No little sensation has been created by the announcement of Dr. Peter Stiens, a Russian physician, living here, that he has devised an apparatus whereby the blind may be made to see, even when their eyes are hopelessly destroyed.

At first the announcement was received with incredulity by scientists and intelligent people, but investigation shows that the invention is not to be lightly dismissed, and it will continue to excite profound interest until its nature is fully known.

Dr. Stiens explains that his invention includes an apparatus which focuses an image of the objects before it—as the human eye does. This image is then conveyed by electricity to the brain, independently of the eyes, whether the subject possesses them or not. Dr. Stiens will not divulge the complete nature and working of his invention, because he says it is not yet perfected.

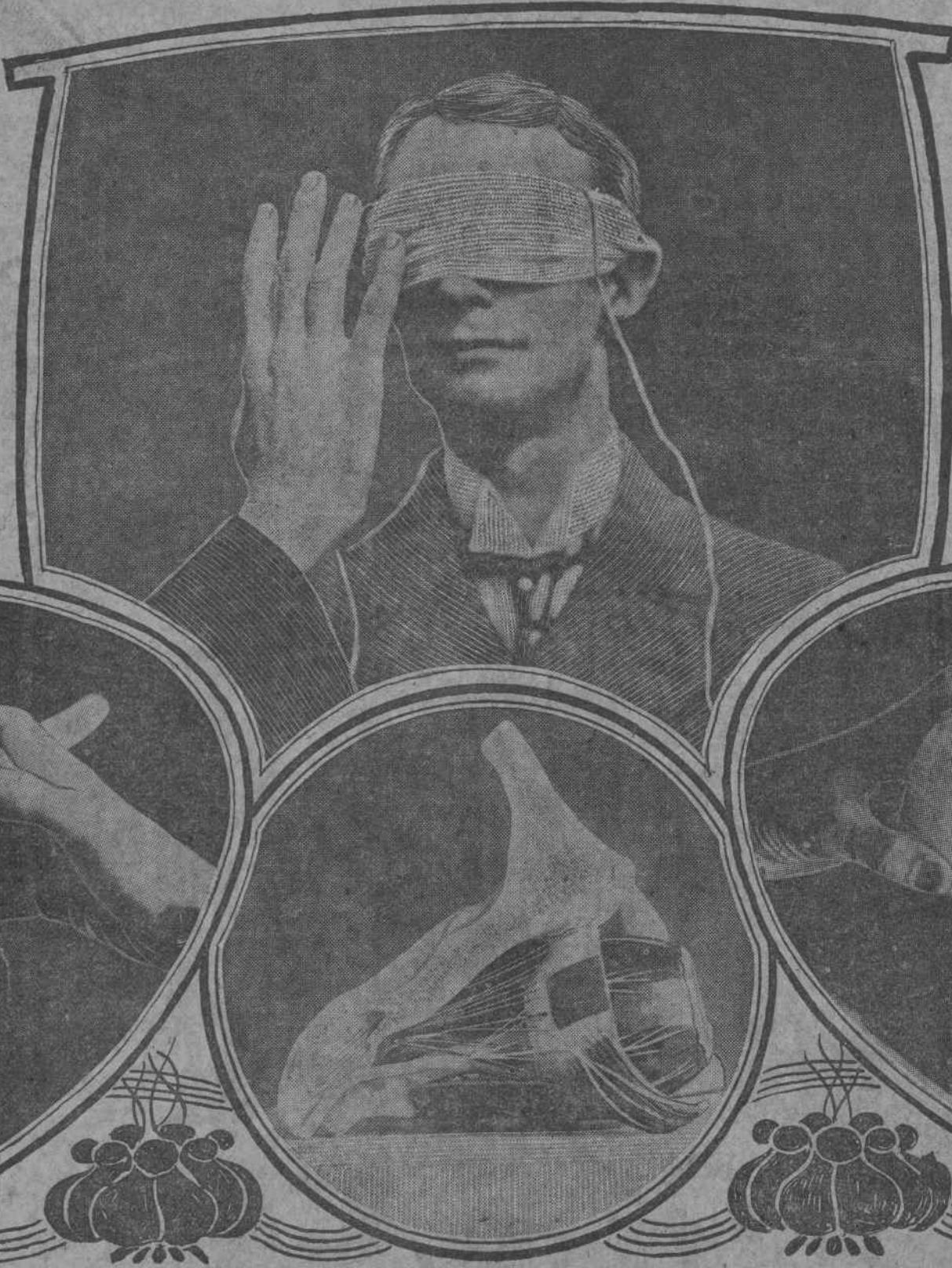
The Sunday Journal correspondent visited Dr. Stiens and induced him to give a demonstration of his invention. I was taken into a small dark room and there heavily blindfolded. The doctor then struck a number of matches which I heard and dashed a lamp before me as he told me, but I was not able to perceive the faintest glimmer of light.

Dr. Stiens then connected my head with

ing to divulge the entire secret of his invention, but he was willing to explain the principles on which it is based.

"Man," he said, "does not see really with his eyes, but with his brain. The eyes are only an instrument for receiving images, which are conveyed to the centre of perception in the brain by the optic nerve. The blind man who perceives the size, shape and nature of an object with his hands sees in a limited sense. If men had evolved without eyes, but with all their present brain power, they would doubtless be able to see by some other method. Some of the lower animals have no eyes, but perceive light with their whole bodies. 'Now, if an image of material objects can be conveyed to the brain by some other agency than that of the eyes, it follows that a blind man who has a sound mind will be able to see perfectly well. This is exactly what my invention accomplishes.

"An image is gathered on a screen instead of on the retina of the eye and is conveyed directly by an electrical current to the brain. Such a use of the electric current has already been foreshadowed in the process well known to science as cataphoresis. By this it is possible to convey medicines, anaesthetics and other substances into the interior of a man's body without his being aware of it. By its aid cocaine can be sent through the solid bone.



middle is popularly known as the pupil. It is really the adjustable hole in the iris which lets the light pass through to the lens of the eye. The interior of the eyeball is filled with what is called the vitreous humor. It consists of a soft, jelly-like substance. Its use is to give the proper distance to the globe of the eye.

At the very back of the eyeball is what is known as the retina. This is the part upon which is received the picture presented before the eye. It communicates directly with the optic nerve, and is believed to be formed by the outspread fibres of this nerve.

The best understanding of the mechanism of the human eye can probably be obtained by comparing it to the simplest form of camera. Such a camera usually consists of a box painted black inside, with a hole in front for the admission of a lens and a ground glass plate at the back on which the photographer can see the picture he is about to take.

In the human eye the convex lens of the camera has its counterpart in the crystalline lens, which lies just back of the iris.

The dark box is represented by the eyeball and the ground glass screen by the retina. In the case of the camera the screen is enabled to receive clear images of objects at different distances by being shifted forward and back. The lens can also be screwed out or in. The human eye accom-

with sight than any part of the eye itself. Photographers know that when they take a picture of a camera they see it upside down, and human eye works in exactly the same way, and we, too, see things upside down. An unconscious act of the perceptive centre in the brain makes the picture bear right side up.

In the same way the brain acts as a interpreter for the eye when such matter size, speed and solidity are presented to it. When we gauge the speed of a train or a horse by what we call sight is an operation of the brain, rather than of the eye, which enables us to estimate the speed. We judge of the motion of an object partly from the motion of its image over the field of the retina and partly from the brain's appreciation of the muscular effort exerted by the eye in following the object.

How we see is still practically a matter of conjecture. Hitherto it has been accepted as a law that light was imprinted on the existence of an eye in a communication with the brain. The eye is capable of receiving a picture without the co-operation of the brain, that picture is useless. One simple example of this is within the experience of one. We often, when deep in thought, have our eyes open and fixed, but see

The Crystalline Lens—From Photograph.

The Muscles of the Eye.

The Human Eye, with Optic Nerve Which Conveys Impression of Sight to the Brain—From Photograph.

his apparatus. Immediately I began to see a dim light, which suffused my whole surroundings. The doctor then asked me if I could distinguish any object. I looked and saw a hand held up with outstretched fingers, which I could distinguish clearly.

The light gradually became brighter and I saw other objects in the room. I could distinguish chairs and tables. It seemed to me that I could see more and more all the time and I had an impression that I should have been able to see perfectly if I had remained in connection with the apparatus long enough.

While I was going through this experiment I felt a sensation like that of a mild electric current passing through my temples. As soon as the apparatus was disconnected everything appeared black to me as before.

Of course, I am not able to declare positively that I was not the subject of a trick; that the bandages over my eyes were not manipulated in some way, or that the X rays did not produce the results which I have described, but I was certainly unable to detect any such fraud.

Several other newspaper men were experimented on in the same way by Dr. Stiens, and all of them agreed that they could only explain what they saw by accepting his statement of his invention.

The doctor, as I have said, was not will-

conveying insensibility to nerves or marrow. My invention may be compared to certain respects to the telephone, which receives an impression of the human voice and reproduces it artificially somewhere else.

The full development of this invention and the principles upon which it is based will lead, I hope, to many wonderful results.

able in enabling the blind to see, but it will convey an image of a scene miles away, just as the telephone conveys the voice. In a slightly varied form it will also enable the deaf to hear.

"I may point out to you that the mere fact that we can see images in our dreams, in the dark, and with eyes closed, is proof

of the possibility of seeing without eyes as we at present understand them."

How great are the difficulties which must be overcome before the power of seeing can be restored to those who have lost it, or before it can be bestowed upon those who were born blind, can be better appreciated when the mechanism of sight is explained.

For the purposes of this explanation only plain these things by automatically altering the size of the opening in the iris and by changing the shape of the crystalline lens.

The human eye may be said to consist of an outer transparent part, called the cornea. The colored portion of the eye is known as the iris. The black spot in the

ing, because the stimulus of ordinary is unable to excite the brain to perceive when it is busy with other things.

A little thought will disclose many things to show the extraordinary way which the sense of sight is dependent on the brain for interpretation.

The following, then, may be said, the way in which the eye works in seeing. The scattered rays of light, reflected from the surface of any object upon which the eye is fixed, are received upon the cornea and there gathered together and pass to the lens. If the light is too strong, the iris contracts so as to let less light into the interior of the eye.

The lens of the eye automatically thickens or thins until the object is exactly focussed upon the retina. That is instantaneous.

The optic nerve, which is attached to the retina, then carries the impression of the picture straight to the back of the brain, the top of the spine, where lies the brain.

This organ can be aptly compared to a telephone station, at which an operator ready to make connection any part of the system.

When the picture, or impression, or by the optic nerve, arrives at the brain it is instantly switched over to the centres. These interpret the picture. If necessary pass on to other centres necessary for the completion of the act which the picture presented to mind seems to require.

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Curious Filipino Characteristics Shown by Palmistry.

AS a great many million Filipinos are going to become citizens of the United States, and as we know next to nothing about them, it becomes important to gain some light on their character. There is a colony of Filipinos at Glen Island, Mr. Isaac Sumner Willette, the palmist, of No. 142 Fifth avenue, has analyzed the hands of one of them, with a view to explaining to Sunday Journal readers what sort of fellow citizens they will make.

The hand of Emilio, of Cebu, is pronounced by the palmist to be very interesting. It is a rare specimen of the true elementary hand. It is seldom found in its pure state, and never among

enlightened people. It denotes a low grade of intelligence and a nature governed by animal instincts. This man does not think—he exists. When his physical wants are supplied he is content. He will not labor, even to procure food. Rather than work, he will hunt, fish and pillage.

He is as active as a cat, and likely as a treacherous.

He loves the water, and will be a good sailor. In some countries sailors easily turn pirates.

This man is incapable of understanding the difference between right and wrong. He is suspicious of kind treatment, and prefers to take his man un-

avaries rather than to fight him fairly. He cares no more for a human life than a tiger. He will hold a flag of truce in one hand, and shoot with the other.

On the upper end of the quadrangle of this hand we find that strange sign, the "Croix Mystique." In connection with this type it means superstition and a belief in magic, luck and devils. It will take about one hundred years to make this man a law-abiding citizen.

Living by custom and habit he will marry according to the manner of his people. He is cheerfully, easily amused, and is passionately fond of music. General Otis should order brass bands.

The hand of Romona, also called Yellow Ribbon, is a mixed one, and badly mixed at that. The hand is weak in all points, and the owner will lead an irresponsible, negative life. The moral sense is lacking. She is ruled by sentiment and fancy, easily pleased, and lives from day to day.

She is warm-hearted and too generous for her own good. The perceptive faculties are well developed, and imitation largely shows her how to do a piece of fancy work and she will duplicate it, but she cannot originate anything, and it is difficult to keep her at one occupation for any length

of time. Pedro's hand comes under the type known as the artist's. It is never the hand of power or command. When the palm is firm, highly developed, with the thumb stiff and large, as found on this hand, the subject will be bold and energetic, but it is still a nature ruled by impulse and instinct rather than by reason.

Marquina has a well formed hand, of the artistic type. The principal lines are clear and long, the palm firm and the mounts evenly developed. We read here a well-balanced organization.

This woman will command respect in any walk of life. She has a bright, capable naturally curly hair."

Once in a while some inquisitive person has inquired of science and has been told: "Well—because you can't!" That sort of answer has created dissatisfaction, but now there arises Arthur Thomson, M. A., to solve the riddle of why some people have curly hair, while others do not.

mind, kind heart and good common sense. This is the hand found in the home—the tender, loving mother and the much-enduring wife. Her house will be a model of neatness and artistic arrangement. She is clever, talkative, cheerful. Being sympathetic and generous, she gives freely without discrimination. She has an emotional nature, and is easily influenced by joy, sorrow, eloquence or music. She learns quickly, but her knowledge will be superficial, through want of application. This is not the hand of the student.

She enjoys good health, has a symmetrical form, and will live until the age of sixty.

She has no fixed religious convictions. The presence of the "Croix Mystique" on this hand indicates mysticism, and a belief in the supernatural.

EVERY woman who has ever made her arm ache by holding her curling tongs in the gas has probably said: "Oh, I wonder why I can't have naturally curly hair?"

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Western Miners Plan a Strange Contest.

ONE of the strangest contests ever held in the United States will take place in Denver in a few weeks. The object of the contest is to see who can most quickly pound a hole through a rock.

On first consideration it does not seem that such a contest would bring forward

either many competitors or many spectators, but the people who have projected the contest in question know better. They are now erecting a grand stand capable of seating 10,000 people, and they expect to see it crowded to the limit. Moreover, so many applications for entrance to the contest have already been received that the

managers are seriously considering the advisability of closing the lists.

While it is true that the actual contest will be held to determine who can most quickly pound a hole through a rock, its real purpose is to decide who is entitled to be considered the champion handier of a miner's hand-drill. The contestants, in every case, will be practical miners.

The contest is to be held in connection with the annual carnival. Great interest in the plan has been exhibited by the mining centres, and both Gripple Creek and Animas have announced

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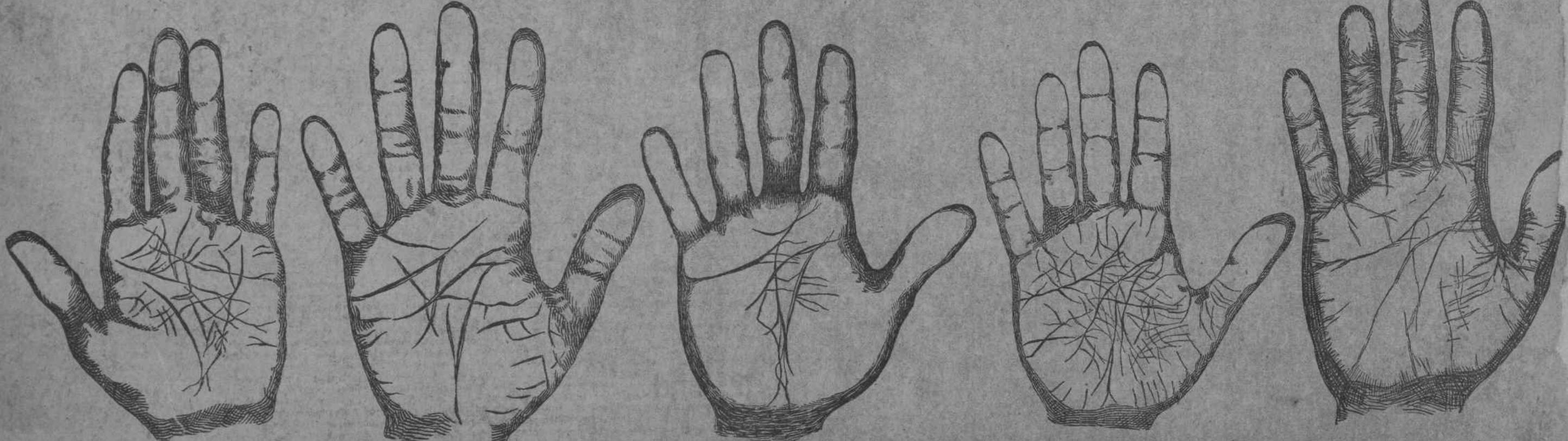
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Romona, or Miss Yellow Ribbon.

Pedro, a Tagalog Rebel.

The Practical Palms of Mr. Emilio of Cebu.

Marquina, a Pleasant Young Woman of Manila.

Estepano Franco, a Panay Musician.